

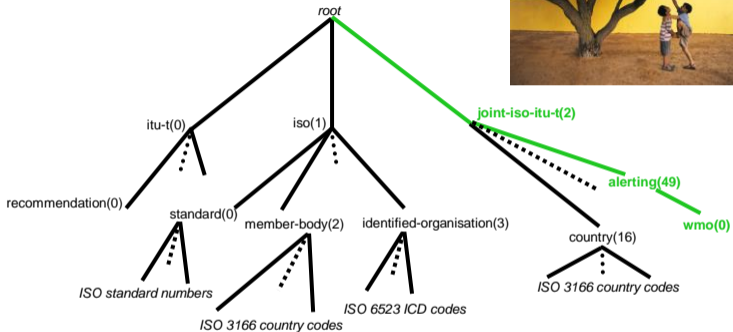


Introduction to Object Identifiers (OIDs) and Registration Authorities

Basic concepts of Object Identifiers (OIDs)

- One of many identification schemes
- Basically very simple: A tree
- Arcs are numbered and may have an associated alphanumeric identifier (beginning with a lowercase)
- Infinitely many arcs from each node (except at the root)
- Objects are identified by the path (OID) from the root to a node
- A Registration Authority (RA) allocates arcs beneath its node to subordinate RAs, and so on, to an infinite depth
- The OID tree is a hierarchical structure of RAs
- Standardized in the [Rec. ITU-T X.660 | ISO/IEC 9834 series](#) of international standards (developed by ITU-T SG17 and ISO/IEC JTC 1/SC 6)
- Originated in 1985, still in use!
- [More information](#)

Top of the OID tree



Example: **{joint-iso-itu-t(2) alerting(49) wmo(0)}**

Note: The name of the three top-level arcs does not imply a hierarchical dependency to ISO or ITU-T.

Another way of displaying the OID tree

Play with it [here](#).



What is an "object"?

- *"Anything in some world, generally the world of telecommunications and information processing or some part thereof, which is identifiable and may be registered"*
[Rec. ITU-T X.660 | ISO/IEC 9834-1]
- OIDs can uniquely and universally identify:
 - standards (ITU-T Recommendations, ISO International Standards, etc.)
 - countries, companies, projects, more generally all sorts of entities
 - encryption algorithms
 - ASN.1 modules, ASN.1 types
 - Lightweight directory application protocol (LDAP) attributes and classes
 - Public key infrastructure (PKI) certificates
 - certification policies
 - management information bases (MIBs) for network management
 - identification schemes
 - e-health patient medical information
 - alerts and alerting agencies
 - [etc.](#)
- More information at <https://oid-base.com/faq.htm>

Some advantages to using OIDs

- Human-readable notation:

```
{joint-iso-itu-t(2) alerting(49) wmo(0) authority(0)}
```

- Dot notation: 2.49.0.0

- URN notation: urn:oid:2.49.0.0

- Internationalized notation (OID-IRI):

```
/Alerting/WMO/0
```

- Unicode labels (using ISO/IEC 10646 characters) can be associated to each OID arc

- Used in international standards from ISO, ITU-T and IETF RFCs, but not only!
- Very good take up: 2,900,000+ OIDs described in the OID repository; many more exist
- Compact binary encoding (normally used in all computer communications)
- Allows transmission over constrained networks
- Can also be used in XML documents

Web-based OID repository

- Provide details about an OID (description, rules to allocate child OIDs, contact information about the Registration Authority...)
- Not an official Registration Authority (RA) → Each OID must be officially allocated by the parent RA before being described in the OID repository
- Descriptions are entered "à la wiki" by any user but are validated by the OID repository administrator
- Automatic notification by email to the RA (if known) when child OIDs are added
- Many other [services](#): search, update of OID descriptions, tree display, etc.
- Web site: <https://oid-base.com>



joint-iso-itu-t(2) *alerting(49)

wmo (0)

child OIDs: authority(0) country-msg(1) org(2)
org-msg(3)



OID description

- Format of this page
- Modify this OID
- Create child OID
- Create sibling OID
- Find similar OIDs
- Density of this OID

{joint-iso-itu-t(2) alerting(49) wmo(0)} (ASN.1 notation)
OID: 2.40.0 (dot notation)
/Alerting/WMO (OID-IRI notation)

Description: [World Meteorological Organization \(WMO\)](#)

Information: In applications and services which support alerting, it is necessary to identify various information objects. Subsequent OIDs identify content included in alert messages or otherwise associated with the activity of alerting.

The procedures (and criteria for acceptance) for allocating subsequent arcs are described in WMO/TD No. 1556 "Administrative procedure for registering WMO alerting identifiers."

OID resolution system (ORS)

- A DNS-based protocol to provide information associated with any OID:
 - description, registration authority, creation date, etc.
 - child OIDs
 - OID-IRI canonical form
- [Rec. ITU-T X.672](#) | ISO/IEC 29168-1

